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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,409	08/28/2001	Toyoaki Sugaya	4767 (47539.15)	6134

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EXAMINER

TRAN, LY T

ART UNIT PAPER NUMBER

2853

DATE MAILED: 10/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,409

Applicant(s)

SUGAYA ET AL.

Examiner

Ly T TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE filed 8/4/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 and 8-37 is/are pending in the application.
- 4a) Of the above claim(s) 8-16 and 24-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6, 17-23 and 31-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/4/03 has been entered.

Election/Restrictions

2. Applicant's election without traverse of characteristic 1D, 2A, 3A and 4A in Paper No. 7 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 31- 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of in view of Ahta et al (USPN 4,597,794) and Iwao (USPN 6,390,617).

With respect to claims 31-33 and 36, Takekoshi discloses an ink jet apparatus and a method comprising:

- A recording head for an ink to jet the pigment ink onto a recording medium (Abstract, Column 4: line 50-55) having an ink receiving layer containing thermoplastic resin particle on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink receiving layer (Column 3: line 5-21).
- A heating and pressing device to heat and press the recording medium so as to make the ink receiving layer of the recording medium to be transparent (Column 3: line 22-32)
- A conveyor to convey the recording medium to the recording head and further to the heating and pressing device (Column 3: line 64-67).
- A temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C (Column 9: line 24-25, Column 10: line 28, in line 28 disclose the temperature in the unit 7 is set at 150°C , so T_0 could be 150°C and could be ΔT 0°C such as $150^{\circ}\text{C} \pm 0^{\circ}\text{C} = 150^{\circ}\text{C}$)
- Heating and pressing device has a recording medium contacting surface to contact the recording medium and comprises a cleaning member to clean the recording medium contact surface (Fig.2: element 77)

With respect to claims 2 and 32, Takekoshi discloses and an apparatus and a method wherein T_0 is $80\text{-}130^{\circ}\text{C}$ (Column 9: line 24-25).

With respect to claim 4, Takekoshi discloses the ink jet recording apparatus is adapted to record an image on one of plural kinds of recording medium (Column 3: line 5-7) and the temperature controller changes the heating temperature in according with the kind of the recording medium (Column 9: line 27-28).

Takekoshi fails to teach a pigment ink and a pressing force of 9.8×10^4 to 4.9×10^6 Pa.

Ahta teaches a pigment ink (Column 2: line 40-44)

Iwao teaches a pressing force is 4.4 kg which is 4.3×10^5 Pa (Column 11: line 10)

It would have been obvious to one having ordinary skill in the art at the time the invention was made with using pigment ink as taught by Ahta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

It would have been obvious to one having ordinary skill in the art at the time the invention was made with the pressing force of 4.3×10^5 Pa as taught by Iwao for the purpose of making the ink stick on the medium more properly therefore obtain the high quality image.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794) and Iwao (USPN 6,390,617) as applied to claim 33 above, further in view of Endo et al. (EP 0564,420).

The combination of Takekoshi, Ahta and Iwao fails to teach controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium.

Endo et al. teaches controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium (fig.13; element S4-S7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify to controlling the heat and pressing device so as to change a heating and pressing time period in accordance with the kind of the recording medium as taught by Endo et al for the purpose of preventing various drawbacks resulting from uneven temperature distribution on the fixing roller.

5. Claims 17-19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 5,597,794) and Iwao (USPN 6,390,617) as applied to claim 33 above, further in view of Kaburagi et al (USPN 5,502,475).

The combination of Takekoshi, Iwao and Ahta fails to teach when the recording does not conduct recording during a predetermined time period, the temperature controller stop controlling the heating temperature such that the heating and pressing device stop heat generation, controlling the heating temperature after the temperature controller stopped the controlling, the heating and pressing device conduct heating and pressing by prolong relatively a heating and pressing time period after the heating

temperature becomes higher than a lowest heating temperature and until the heating temperature becomes within a predetermined temperature range, recording apparatus does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keep the temperature within a second temperature lower than the range and recording does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keeps the heating temperature within a second temperature lower than the range and further when the recording does not conduct recording during a predetermined another time of period, the temperature controller stop the heating temperature such that the heating and pressing device stop heat generation and changing the feeding speed.

Kaburagi et al. teaches when the recording does not conduct recording during a predetermined time period, the temperature controller stop controlling the heating temperature such that the heating and pressing device stop heat generation, controlling the heating temperature after the temperature controller stopped the controlling, the heating and pressing device conduct heating and pressing by prolong relatively a heating and pressing time period after the heating temperature becomes higher than a lowest heating temperature and until the heating temperature becomes within a predetermined temperature range, recording apparatus does not conduct recording during a predetermined time period, the temperature controller controls such that the heating and pressing device keep the temperature within a second temperature lower than the range and recording does not conduct recording during a predetermined time

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period, the temperature controller controls such that the heating and pressing device keeps the heating temperature within a second temperature lower than the range and further when the recording does not conduct recording during a predetermined another time of period, the temperature controller stop the heating temperature such that the heating and pressing device stop heat generation (Column 8: line 9-22, line 45-64, Column 9; line 1-3, 28-64) and changing the feeding speed (Column 12: line 15-16)

It would have been obvious to one having ordinary skill in the art at the time the invention was made as modify with controlling the temperature as taught by Kaburagi et al for the purpose of improving the fixative-ness on the ink onto the sheet.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794), Iwao (USPN 6,390,617) and Kaburagi et al (USPN 5,502,475) as applied to claims 33 and 19 above, further in view of Silverbrook (USPN 5,815,173)

The combination of Takekoshi, Iwao, Ahta and Kaburagi discloses the claimed invention except that using a scanning head instead of full line head. Silverbrook shows that the scanning head and full line head is an equivalent structure known in the art (Column 25: line 37-40). Therefore, because these two scanning head and full line head were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the full line head for the scanning head.

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7. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekoshi (USPN 6,120,199) in view of Ahta et al. (USPN 4,597,794), Iwao (USPN 6,390,617) and Kaburagi et al (USPN 5,502,475) as applied to claim 33 and 19 above, further in view of Nakano et al. (USPN 6,012,794).

The combination of Takekoshi, Ahta, Iwao and Kaburagi fails to teach the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed.

Nakano et al. teaches the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed (Abstract, Column 13: line 25-35).

It would have been obvious to one having ordinary skill in the art at the time the combined invention was made as modify with the recording head prolongs the recording time period by adjusting a stop time at which a scanning direction is changed as taught by Nakano et al for the purpose of obtaining a high precision regardless of trembles of ink surface (Nokano USPN 6,012,794, Column 1: line 35-36).

8. Claims 5, 33-35 and 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo et al. (JP 05-112000) in view of Takekoshi (USPN 6,120,199) and Iwao (USPN 6,390,617).

Okubo discloses an ink jet apparatus comprising:

- A recording head for jetting ink onto a recording medium (Abstract)

- A heating and pressing device to heat and press the recording medium so as to make the ink receiving layer of the recording medium to be transparent (Fig.3: element 5, 12)
- A conveyor to convey the recording medium to the recording head and further to the heating and pressing device (Fig.3: element 2).
- The heating and pressing device comprises a belt member stretched around at least two rollers and a roller coming in contact with the belt member so as to form a nip section there-between where the recording medium passes through (Fig.3: element 5, 12)
- The heating and pressing two belt members stretched around at least two rollers and the two belt member come in contact with the belt member so as to form a nip section there-between where the recording medium passes through (Fig.3: element 5, 12)

However, Okubo fails to teach temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C , ink is pigment, the medium having an ink receiving layer containing thermoplastic resin particle on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink receiving layer and a pressing force of 9.8×10^4 to 4.9×10^6 Pa.

Takekoshi teaches the recording head for an ink to jet the ink onto a recording medium (Abstract) having an ink receiving layer containing thermoplastic resin particle on a surface and a ink solvent absorbing layer adjoining to an inner side of the ink

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receiving layer (Column 3: line 5-21), temperature controller to control a heating temperature by the heating and pressing device within a range of $T_0 \pm \Delta T$, where T_0 is 50°C to 150°C and ΔT is not larger than 10°C (Column 9: line 24-25, Column 10: (Column 9: line 24-25, Column 10: line 28, in line 28 disclose the temperature in the unit 7 is set at 150°C , so T_0 could be 150°C and could be ΔT 0°C such as $150^{\circ}\text{C} \pm 0^{\circ}\text{C} = 150^{\circ}\text{C}$ line 40-42)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Okubo et al to have ink receiving layer containing thermoplastic resin particle on a surface and a pigment ink solvent absorbing layer adjoining to an inner side of the ink receiving layer as taught by Takekoshi for the purpose of providing the degradation of printing quality.

Ihta et al teaches a pigment ink (Column 2: line 40-44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the pigment ink as taught by Ahta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

Iwao teaches a pressing force is 4.4 kg which is 4.3×10^5 Pa (Column 11: line 10)

It would have been obvious to one having ordinary skill in the art at the time the invention was made with the pressing force of 4.3×10^5 Pa as taught by Iwao for the purpose of making the ink stick on the medium more properly therefore obtain the high quality image.

Response to Arguments

9. Applicant's arguments filed 8/4/03 have been fully considered but they are not persuasive.

First, Applicant's argument that no need to apply a pressure onto the surface of the recording medium if jetting a dye ink onto the recording medium to form a dye ink image so it is not obvious from the teaching of Takekoshi is not persuasive because Takekoshi does not mention about what kind of the ink can be use so it could be a pigment or dye, therefore, it would be obvious to use a pigment ink as taught by Ohta for the purpose of obtaining an extremely excellent in water resistance and light fastness image.

Second Applicant's argument that Takekoshi does not teach the t_0 is determined as 150°C is not persuasive because refer to column 10, line 28, disclose the temperature in the unit 7 is set at 150°C , so T_0 could be 150°C and could be ΔT 0°C such as $150^{\circ}\text{C} \pm 0^{\circ}\text{C} = 150^{\circ}\text{C}$. Therefore, Takekoshi still meet the limitation of the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly T TRAN whose telephone number is 703-308-0752. The examiner can normally be reached on M-F (7:30am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 703-308-4896. The fax phone numbers


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for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0967.

A handwritten signature in cursive script, appearing to be 'lt'.

October 7, 2003

A handwritten signature in cursive script, appearing to be 'Stephen D. Meier'.

Stephen D. Meier
Primary Examiner